

# **STUDY DESIGN AND TOOLS USED IN A LOW COST WATER QUALITY ASSESSMENT FOR RIVERS/WATERSHEDS**

**Nancy B. Turyk, Byron H. Shaw, and Adam Freihoefer**

Environmental Task Force Program, College of Natural Resources Room 216, UW-Stevens Point, Stevens Point, WI 54481

## **Biographical Sketch of Author**

Nancy Turyk is a Water Quality Specialist with the Environmental Task Force Program at the UW-Stevens Point. She works with university students on a variety of non-point source issues. One area of emphasis is the assessment of groundwater and surface water quality in relation to land use practices. For the last 10 years the Environmental Task Force Program has been working with agencies and citizens to develop of low cost water quality analysis in rivers and lakes on a watershed scale. Dr. Byron Shaw is Emeritus faculty in the College of Natural Resources at UW-Stevens Point. Non-point pollution and phosphorus loading were among the research topics that were focused on by Dr. Shaw during his 30-year tenure. Adam Freihoefer is pursuing his Bachelor of Science degree as a Groundwater major.

## **Abstract**

Monitoring water quality can be useful to determine critical areas within a watershed, engage citizens in a deeper understanding of their local river systems, and form collaborative relationships between citizens, land managers, educators, and scientists. However, cost of monitoring can frequently be a problem. We have worked with a number of groups to develop low-cost monitoring programs to meet their needs.

A combination of base flow and event samples are used to characterize general water quality conditions and determine if impairments are groundwater or runoff related. This type of information is useful for land managers to focus their time and cost share, as well as to help select the practices most appropriate for improving degraded conditions. Sample sites are strategically located along the main river and mouths of the tributaries in the primary sub-watersheds, along with other identified tributaries of interest. Collection periods are customized to each watershed; in rural watersheds, sample collection may be scheduled for the “agricultural seasons” to examine the effects of land use practices throughout an agricultural year. In-stream siphon samplers are used to collect event samples, and collection and sample preparation strategies are customized to the abilities of the group/individuals involved with the study. Samples are analyzed for nutrients and solids. Additional analyses may include pesticides, fecal coliform bacteria, or metals, depending upon the specific concerns within a watershed.

Results of a recent two-year study in the Plover River Watershed located in Central Wisconsin will be utilized as a case study. This 42-mile river flows through two counties. Land uses change from wooded wetlands at the headwaters, to grass-dominated agriculture, to conventional row crop agriculture, and ends in an urban setting. Changes in water quality correspond with land use changes that occur in the watershed. These data will be used to assist in the protection of this minimally impacted river through acquisition of conservation easements, through community education, and in the comprehensive planning process.